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of systems, Proterozoic, Permian, Lower Cretaceous, Miocene, and Oligocene only being absent. Pliocene (Lafayette) is indicated in the legend of the map but not shown on the map itself, and the legend seems to be intended to throw doubt on the validity of the formation in Tennessee.

Under the designation "Columbia Formation," loess, loam, and loose sand are grouped. This seems to us an unfortunate classification. The "Terrace Deposits" of the map are quite as appropriately classed as "Columbia" as the loess and loam which are so classed. We are of the opinion that the use of the term "Columbia Formation" should be discontinued (though possibly the term "Columbia Series" may be useful to include all Pleistocene non-glacial formations). What was originally grouped under the name Columbia included several formations of which the probable equivalents of the Terrace Deposits of this map were a chief member. "Loess" would seem to be an adequate designation of the deposits included under that term, without classing them as Columbia. Their classification as Pleistocene seems altogether adequate. The loess, of many regions at least, is of very different ages, and all of it does not belong to one formation in the chronological sense.

The map is distinct and represents sufficient change from its predecessors to be welcome. It is accompanied by elaborate explanatory legends and by four cross-sections which represent well the structure of the formations in the state.

The map may be had by application to the State Geologist, Nashville, Tennessee. Postage, 8 cents.

R. D. S.

Cretaceous Deposits of the Eastern Gulf Region, and Species of Exogyra from the Eastern Gulf Region and the Carolinas. By L. W. STEPHENSON. U.S. Geol. Surv., Prof. Paper 81, 1914. Pp. 75, pls. 21, charts 8.

In eastern Alabama and Georgia a terrane, previously regarded as forming the eastward extension of the Tuscaloosa series of western Alabama, has been shown by its unconformable relations with overlying formations, lithologic character, and contained plant fossils to be of Lower Cretaceous (Comanchean) age, though probably somewhat younger than the Patuxent. Belonging to the Upper Cretaceous (Cretaceous) of the eastern Gulf region are four formations, Tuscaloosa (regarded as Lower Cretaceous), Eutaw, Selma chalk, and

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Ripley. The first, consisting of irregularly bedded sands, clays, and gravels, has an estimated thickness of 1,000 feet and rests unconformably on a basement of Paleozoic metamorphics, and in the east on Pre-Cambrian crystalline rocks and in part on Lower Cretaceous. The Eutaw formation, somewhat similar to the Tuscaloosa in lithologic character, is believed to be entirely marine, though much of the formation was doubtless laid down in very shallow water. It is 400-500 feet thick, rests conformably on the Tuscaloosa, and is overlain conformably in part by the Selma chalk, and in part by the Ripley formation. The Selma chalk consists mainly of more or less argillaceous and sandy limestones rendered chalky by their large content of foraminiferal remains. It is abundantly fossiliferous in certain portions, yielding large numbers of the Exogyra described in the latter portion of the paper. The Selma grades into the sandy member of the Tuscaloosa, and the clastic beds of the Ripley formation when followed along the strike. A thickness of 930 feet of the chalk formation has been measured in western Alabama. The Ripley formation, 250-350 feet in thickness, consists typically of calcareous and glauconitic sands, sandy clays, and impure limestones and marls of marine origin. It extends through parts of the Gulf states from southern Illinois to Georgia. A study of the faunas of the various formations is detailed, and correlations with other Cretaceous regions indicated by chart.

A description of the genus *Exogyra*, which includes three species with two varieties, constitutes the second portion of the paper.

R. C. M.

The Jurassic Flora of Cape Lisburne, Alaska. By F. H. KNOWLTON. U.S. Geol. Surv., Prof. Paper 85, Part D, 1914. Pp. 25, pls. 4.

The Jurassic of the Cape Lisburne area is estimated to have a very great thickness, 15,000 feet, and contains from 40 to 50 coal beds which range in thickness from 1 or 2 feet to over 30 feet. Plant collections from this area show 17 species of well-defined Jurassic types. The close similarity or identity of a number of forms with species from eastern Siberia and Mongolia is noteworthy. The flora indicates a warm-temperate or subtropic climate and the geographic range, especially into the Arctic and Antartic, is suggestive of the uniform mildness of the Jurassic earth-climate.

R. C. M.